

Abstract of the Disclosure

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A fuel processing system including a filter for reforming a hydrocarbon fuel and its operation is disclosed. The system includes a first chamber for receiving a hydrocarbon fuel and combining it with air or water; a reformer in fluid connection with and down stream of the first chamber, which receives the hydrocarbon fuel combined with either air or water to reform the fuel to a reformat stream, which contains a hydrogen rich atmosphere; a second chamber in fluid connection with the reformer which is capable of receiving the reformat stream from the reformer; a water inlet connected to the second chamber capable of introducing water to the reformat stream; and a filter in fluid connection with and down stream of the second chamber, which is capable of preventing a substantial portion of any solid particles contained in the reformat stream from passing therethrough. The filter can be regenerated by introducing water as an oxidant to the reformat stream to oxidize any collected soot on the filter in the hydrogen rich atmosphere of the reformat stream.